

Remarks

The Office Action mailed March 17, 2005 has been reviewed and the following remarks have been made in consequence thereof.

Claims 1-11 are now pending in this application. Claims 1-9 are rejected. Claims 10 and 11 are newly added. Claims 6-8 have been amended. No new matter has been added.

The rejection of Claims 1 and 9 under 35 U.S.C. § 103(a) as being unpatentable over Laskaris et al. '819 (U.S. Patent 6,150,819) in view of Laskaris et al. '434 (U.S. Patent 6,662,434) is respectfully traversed.

Laskaris et al. '819 describe a magnetic resonance imaging (MRI) system including a plurality of laminate tiles (42) that have a trapezoidal shape (column 5, lines 46-47). However, a plurality of laminate tiles (42') of the MRI system may have an annular sector shape (column 5, lines 47-48). An annular sector is a trapezoid which has a concave top or short side (43') and a convex bottom or long side (44') (column 5, lines 49-50). The laminate tiles (42) are attached to a pole piece base (51) and to each other by epoxy (column 5, lines 53-55).

Laskaris et al. '434 describe a magnetic resonance imaging (MRI) system including a permanent magnet formed of a precursor body that includes at least two laminated sections (column 3, lines 28-32, column 5, lines 14-16). Each section is made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks adhered together by an adhesive substance (column 5, lines 19-22). The precursor body may be magnetized before or after placing pole pieces into the MRI system (column 6, lines 28-29).

Claim 1 recites a circular pole piece included in a magnetic circuit for magnetic resonance imaging (MRI), "wherein laminate blocks each of which has hexagonal soft magnetic material tiles layered are arranged so that the blocks will have a substantially circular shape as a whole."

Neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest a circular pole piece included in a magnetic circuit

for magnetic resonance imaging as recited in Claim 1. Specifically, neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest a circular pole piece, where laminate blocks each of which has hexagonal soft magnetic material tiles layered are arranged so that the blocks will have a substantially circular shape as a whole. Rather, Laskaris et al. '819 describe a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Accordingly, neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest a circular pole piece, where each laminate block has hexagonal soft magnetic material tiles. For the reasons set forth above, Claim 1 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434.

Claim 9 recites an MRI system comprising "a circular pole piece comprising a plurality of laminate blocks arranged so that the laminate blocks will have a substantially circular shape as a whole, and wherein each laminate block comprises a plurality of hexagonal soft magnetic material tiles."

Neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest an MRI system as recited in Claim 9. Specifically, neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest a circular pole piece including a plurality of laminate blocks arranged so that the laminate blocks will have a substantially circular shape as a whole, and where each laminate block comprises a plurality of hexagonal soft magnetic material tiles. Rather, Laskaris et al. '819 describe a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after

placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Accordingly, neither Laskaris et al. '819 nor Laskaris et al. '434, considered alone or in combination, describe or suggest a circular pole piece, where each laminate block has hexagonal soft magnetic material tiles. For the reasons set forth above, Claim 9 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 1 and 9 be withdrawn.

The rejection of Claims 2-8 under 35 U.S.C. § 103(a) as being unpatentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al. (U.S. Patent 5,631,636) is respectfully traversed.

Laskaris et al. '819 and Laskaris et al. '434 are described above.

Ohta et al. describe a magnetic resonance imaging system including a plurality of block-shaped laminate silicon steel sheets (26) in which a plurality of directional silicon steel sheets each having a directionality in one identical direction are previously laminated and integrated in a direction of a thickness to form sub-blocks (26a and 26b) (column 3, lines 50-60). Subsequently, the sub blocks are laminated and integrated such that the directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other (column 3, lines 50-60). The MRI system also includes a plurality of block-shaped laminate silicon steel sheets (26) using non-directional silicon steel sheets in which they are merely laminated and integrated (column 3, lines 61-65)

Claims 2-5 depend from independent Claim 1 which recites a circular pole piece included in a magnetic circuit for magnetic resonance imaging (MRI), "wherein laminate blocks each of which has hexagonal soft magnetic material tiles layered are arranged so that the blocks will have a substantially circular shape as a whole."

None of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest a circular pole piece included in a magnetic circuit for magnetic resonance imaging as recited in Claim 1. Specifically, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in

combination, describe or suggest a circular pole piece, where laminate blocks each of which has hexagonal soft magnetic material tiles layered are arranged so that the blocks will have a substantially circular shape as a whole. Rather, Laskaris et al. '819 describe a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Ohta et al. describe a plurality of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other. Ohta et al. also describe a plurality of block-shaped non-directional silicon steel sheets that are merely laminated and integrated. Accordingly, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest a circular pole piece, where each laminate block has hexagonal soft magnetic material tiles. For the reasons set forth above, Claim 1 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al.

When the recitations of Claims 2-5 are considered in combination with the recitations of Claim 1, Applicants submit that dependent Claims 2-5 likewise are patentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al.

Claim 6 recites a laminate block manufacturing method comprising the steps of "hexagonally cutting a directional magnetic steel sheet, which has an axis of easy magnetization, using a die so as to produce directional magnetic steel sheet tiles of a pole piece; layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the tiles will exhibit a non-directional property as a whole; and integrating the tiles using an adhesive, through caulking, or using a rivet or screw."

None of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest a laminate block manufacturing method

as recited in Claim 6. Specifically, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a directional magnetic steel sheet, which has an axis of easy magnetization, using a die so as to produce directional magnetic steel sheet tiles of a pole piece, layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the tiles will exhibit a non-directional property as a whole. Rather, Laskaris et al. '819 describe a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Ohta et al. describe a plurality of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other. Ohta et al. also describe a plurality of block-shaped non-directional silicon steel sheets that are merely laminated and integrated. A description that a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other does not describe or suggest an arrangement at an angle of sixty degrees between axes of easy magnetization for exhibiting a non-directional property as a whole. Accordingly, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a directional magnetic steel sheet so as to produce directional magnetic steel sheet tiles of a pole piece, and layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the tiles will exhibit a non-directional property as a whole. For the reasons set forth above, Claim 6 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al.

Claim 7 recites a laminate block manufacturing method comprising the steps of "hexagonally cutting a directional magnetic steel sheet, which has an axis of easy magnetization, using a die so as to produce directional magnetic steel sheet tiles of a pole piece; hexagonally cutting a non-directional magnetic steel sheet, which is devoid of an axis of easy magnetization, using a die so as to produce non-directional

magnetic steel sheet tiles of the pole piece; layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the directional magnetic steel sheet tiles will exhibit a non-directional property as a whole, and layering at least one of the non-directional magnetic steel sheet tiles in combination with the directional magnetic steel tiles; and integrating the directional magnetic steel sheet tiles and at least one of the non-directional magnetic steel sheet tiles using an adhesive, through caulking, or using a rivet or screw.”

None of Laskaris et al. ‘819, Laskaris et al. ‘434, or Ohta et al., considered alone or in combination, describe or suggest a laminate block manufacturing method as recited in Claim 7. Specifically, none of Laskaris et al. ‘819, Laskaris et al. ‘434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a directional magnetic steel sheet, which has an axis of easy magnetization, using a die so as to produce directional magnetic steel sheet tiles of a pole piece, hexagonally cutting a non-directional magnetic steel sheet, which is devoid of an axis of easy magnetization, using a die so as to produce non-directional magnetic steel sheet tiles of the pole piece, layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the directional magnetic steel sheet tiles will exhibit a non-directional property as a whole, and layering at least one of the non-directional magnetic steel sheet tiles in combination with the directional magnetic steel tiles, and integrating the directional magnetic steel sheet tiles and at least one of the non-directional magnetic steel sheet tiles using an adhesive, through caulking, or using a rivet or screw. Rather, Laskaris et al. ‘819 describe a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. ‘434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Ohta et al. describe a plurality of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other. Ohta et al. also describe a plurality of block-shaped non-directional silicon steel sheets that are merely laminated and integrated. A description that a plurality of axes of easy

magnetization of the sub-blocks are perpendicular to each other does not describe or suggest an arrangement at an angle of sixty degrees between axes of easy magnetization for exhibiting a non-directional property as a whole. Moreover, a description of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other and the plurality of block-shaped non-directional silicon steel sheets does not describe or suggest layering at least one of the non-directional magnetic steel sheet tile in combination with the directional magnetic steel tiles. Accordingly, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a directional magnetic steel sheet so as to produce directional magnetic steel sheet tiles of a pole piece, hexagonally cutting a non-directional magnetic steel sheet so as to produce non-directional magnetic steel sheet tiles of the pole piece, layering the directional magnetic steel sheet tiles with the axes of easy magnetization thereof turned by 60° so that the directional magnetic steel sheet tiles will exhibit a non-directional property as a whole, and layering at least one of the non-directional magnetic steel sheet tiles in combination with the directional magnetic steel tiles, and integrating the directional magnetic steel sheet tiles and at least one of the non-directional magnetic steel sheet tiles. For the reasons set forth above, Claim 7 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al.

Claim 8 recites a laminate block manufacturing method comprising the steps of "hexagonally cutting a non-directional magnetic steel sheet devoid of an axis of easy magnetization using a die so as to produce non-directional magnetic steel sheet tiles of a pole piece; layering the non-directional magnetic steel sheet tiles; and integrating the tiles using an adhesive, through caulking, or using a rivet or screw."

None of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest a laminate block manufacturing method as recited in Claim 8. Specifically, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a non-directional magnetic steel sheet devoid of an axis of easy magnetization using a die so as to produce non-directional magnetic steel sheet tiles of a pole piece. Rather, Laskaris et al. '819 describe a pole piece base of a magnetic resonance

imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 describe a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. A description of the precursor body does not describe or suggest a pole piece. Ohta et al. describe a plurality of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other. Ohta et al. also describe a plurality of block-shaped non-directional silicon steel sheets that are merely laminated and integrated. Accordingly, none of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest hexagonally cutting a non-directional magnetic steel sheet so as to produce non-directional magnetic steel sheet tiles of a pole piece. For the reasons set forth above, Claim 8 is submitted to be patentable over Laskaris et al. '819 in view of Laskaris et al. '434, and further in view of Ohta et al.

For at least the reasons set forth above, Applicants respectfully request that the Section 103 rejection of Claims 2-8 be withdrawn.

Moreover, Applicants respectfully submit that the Section 103 rejections of Claims 1-9 are not proper rejections. As is well established, obviousness cannot be established by combining the teachings of the cited art to produce the claimed invention, absent some teaching, suggestion, or incentive supporting the combination. None of Laskaris et al. '819, Laskaris et al. '434, or Ohta et al., considered alone or in combination, describe or suggest the claimed combination. Furthermore, in contrast to the assertion within the Office Action, Applicants respectfully submit that it would not be obvious to one skilled in the art to combine Laskaris et al. '819 with Laskaris et al. '434 or Ohta et al. because there is no motivation to combine the references suggested in the cited art itself.

As the Federal Circuit has recognized, obviousness is not established merely by combining references having different individual elements of pending claims. Ex parte Levengood, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. & Inter. 1993). MPEP 2143.01. Rather, there must be some suggestion, outside of Applicants' disclosure, in the prior

art to combine such references, and a reasonable expectation of success must be both found in the prior art, and not based on Applicants' disclosure. In re Vaeck, 20 U.S.P.Q.2d 1436 (Fed. Cir. 1991). In the present case, neither a suggestion or motivation to combine the prior art disclosures, nor any reasonable expectation of success has been shown.

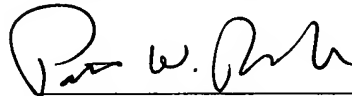
Furthermore, it is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the cited art so that the claimed invention is rendered obvious. Specifically, one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the art to deprecate the claimed invention. Further, it is impermissible to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The present Section 103 rejections are based on a combination of teachings selected from multiple patents in an attempt to arrive at the claimed invention. Specifically, Laskaris et al. '819 teach a pole piece base of a magnetic resonance imaging system and that a plurality of laminate tiles that have a trapezoidal shape or an annular sector shape are attached to the pole piece base. Laskaris et al. '434 teach a precursor body that includes at least two laminated sections, which are made of a plurality of square, hexagonal, trapezoidal, annular sector or other shaped blocks. The precursor body may be magnetized before or after placing pole pieces into a magnetic resonance imaging system. Ohta et al. teach a plurality of sub blocks integrated such that directions of a plurality of axes of easy magnetization of the sub-blocks are perpendicular to each other. Ohta et al. also teach a plurality of block-shaped non-directional silicon steel sheets that are merely laminated and integrated. Since there is no teaching nor suggestion in the cited art for the combination, the Section 103 rejections appear to be based on a hindsight reconstruction in which isolated disclosures have been picked and chosen in an attempt to deprecate the present invention. Of course, such a combination is impermissible, and for this reason alone, Applicants request that the Section 103 rejections of Claims 1-9 be withdrawn.

For at least the reasons set forth above, Applicants respectfully request that the rejections of Claims 1-9 under 35 U.S.C. 103(a) be withdrawn.

Newly added Claims 10 and 11 depend from independent Claim 1, which is patentable over the cited art for the reasons set forth above. For at least the reasons set forth above, Applicants respectfully submit that Claims 10 and 11 are also patentable over the cited art.

In view of the foregoing amendment and remarks, all the claims now active in this application are believed to be in condition for allowance. Reconsideration and favorable action is respectfully solicited.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "Patrick W. Rasche", written over a horizontal line.

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